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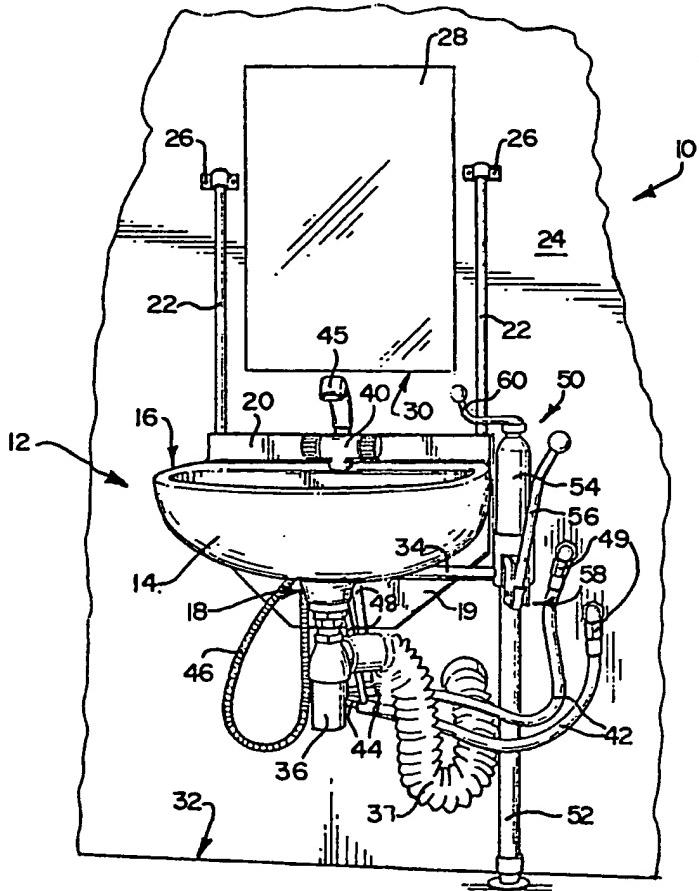
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(54) Wash-basin

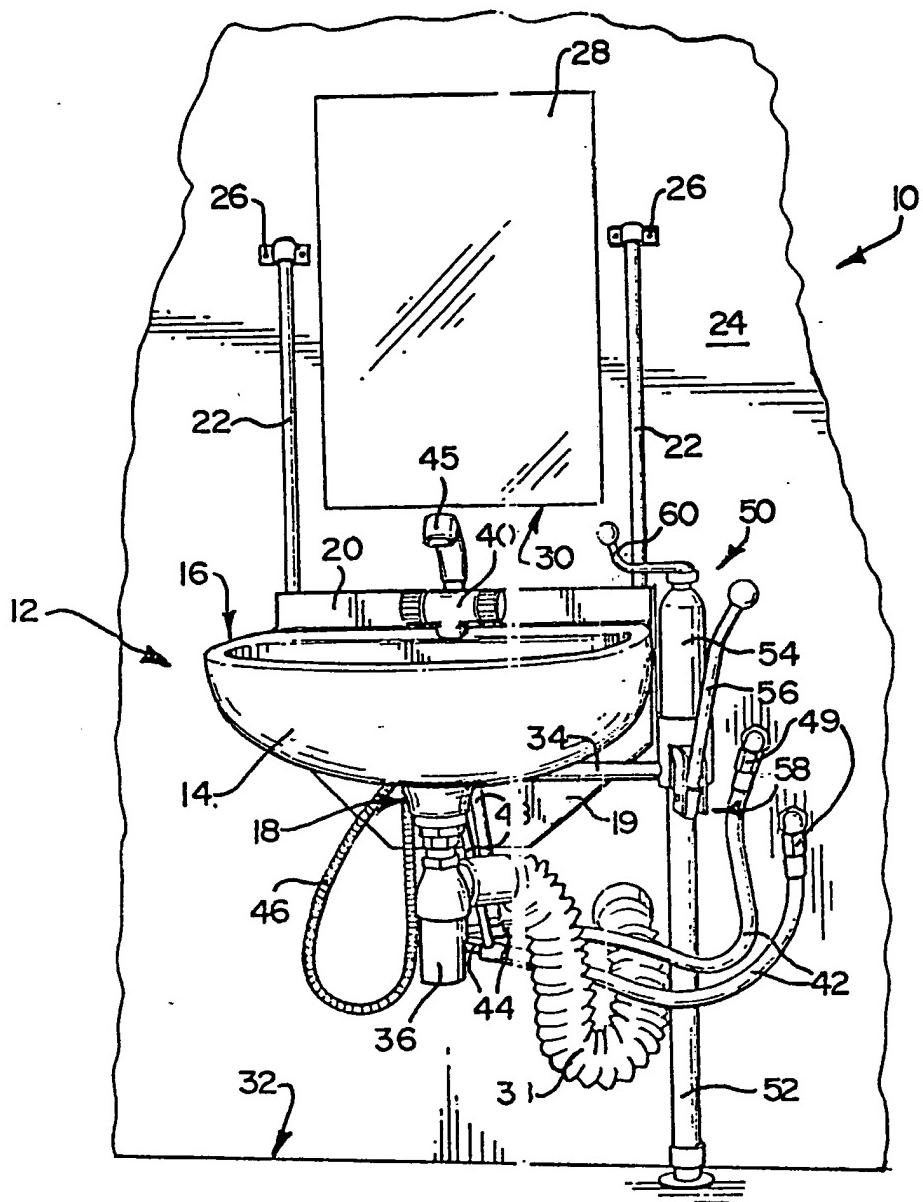
(57) The invention provides a wash basin assembly 12 and installation 10. In the assembly a wash basin 14 is mounted on an adjustable mounting comprising slide rails 22 along the basin which is slidable to adjust its height. A hydraulic lifting mechanism in the form of a jack 50 is connected to the basin for adjusting the height of the basin in use. In the installation the basin is provided with a flexible waste pipe 38 and flexible water supply pipes 42.



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SPECIFICATION**Wash-basin**

5 **THIS INVENTION** relates to wash-basin assembly. In particular it relates to a wash-basin assembly suitable for use by persons confined to wheel-chairs.

According to the invention, there is provided a wash basin assembly which includes:
 10 a wash basin mounted on an adjustable mounting; and
 a hydraulic lifting mechanism connected to the basin for adjusting the height of the wash
 15 basin on the mounting in use.

More specifically, the basin is provided with a mounting on which in use, the height of the basin above the ground is adjustable between upper and lower positions. The mounting may
 20 be adjustable, preferably infinitely, to allow the basin in use to assume any one of a plurality of intermediate positions between the upper and lower positions.

The adjustable mounting may thus comprise at least one slide rail, which may be adapted for wall mounting, along which the basin is slideable. The hydraulic lifting mechanism may be in the form of a hydraulic jack whereby the basin is movable, in use, along
 25 the slide rail. The jack may be adapted for floor mounting.

The jack may have an operating lever for extending the jack progressively between various locked positions, and a release lever for
 35 releasing the jack to permit the jack to retract. In use operation of the operating lever will raise the basin progressively between locked positions on the rail, the operation of the release lever will release the jack to permit the
 40 basin to slide down the rail under gravity.

Current experiments being conducted by the Applicant show however that, where mains water pressure is sufficient, it may be preferable for the lifting mechanism to comprise a telescopic piston and cylinder arrangement, operable by mains water pressure.

The basin may be provided with a splash plate attached thereto to project upwardly from the rim of the basin and extend horizontally along the rear side of the rim in use. The basin may further be provided with a variable flow mixer mounted thereon for mixing hot and cold water supplies. The mixer may be provided with a single outlet, being thermostatically controlled, and the outlet of the mixer may be provided with a moveable head connected thereto by means of a flexible hose, being provided also with lever operated controls for the thermostatic control and the flow control thereof. Naturally, if desired, two separate ordinary taps or faucets may be employed.

The invention extends to a wash basin installation which includes:

65 a wash basin assembly as described above

and wherein the basin is operatively mounted on the adjustable mounting and is provided with a flexible waste pipe leading to a drain and with at least one flexible water supply pipe connected to a water supply.

The flexible pipes may be in the form of flexible pressure hoses. In such installation the basin will typically be mounted on a wall by two parallel laterally spaced rails along which
 75 it is slideable, the rails being attached to the wall to extend vertically.

At least some, and preferably all, the points where the basin is connected to the wall and/or floor may be rigidly connected together when the basin is manufactured, eg by means of a rigid framework, to facilitate provide proper alignment of the basin with the floor and/or wall, when it is installed.

Conveniently, the two rails of the installation may have a mirror mounted therebetween.

Bearing in mind that the basin is primarily intended for use by aged, injured or otherwise incapacitated persons, the upper and lower
 90 positions are selected (being eg at 1150 mm and 720 mm rim height respectively) for convenience either of an adult who is standing or one who is sitting in a wheelchair.

Similarly, the mirror, which may extend horizontally about 400 mm from the one slide rail to the other, may have its lower edge at a height of eg 780 mm and the basin itself, and its mounting, may for reasons of safety be constructed to carry a mass or dead weight of
 95 at least 150 kg applied to the outer rim of the basin remote from the wall.

The invention will now be described, by way of example, with reference to the accompanying illustrative drawing, in which the single figure shows a three dimensional view, substantially in front elevation, of a wash-basin installed against a wall.

In the drawing, generally, reference numeral 10 indicates a wash basin installation according to the invention, and reference numeral 12 indicates a wash basin assembly according to the invention. The wash basin assembly 12 includes a ceramic or vitreous bowl portion or wash basin 14 having an

110 upper rim 16 and a centrally located lower outlet at 18. A downwardly tapering plate 19 is provided fast with the rear or wall side of the basin 14, its upper portion extending horizontally the full width of the basin 14 and projecting upwardly above the rim 16, by about 50 mm to act as a splash plate 20.

Mounted on the rear of the plate 19 and not shown, are a pair of laterally spaced bushes having nylon inserts, which fit with a sliding frictional fit respectively around an adjustable mounting which is in the form of a pair of vertically extending rails 22, which are spaced laterally from each other and are parallel to each other. Opposite ends of each of
 125 130 these rails are connected to a wall 24 by

- brackets 26 which are connected to the wall by screws, expansion bolts, or the like.
- A mirror 28 is provided on the wall 24 between the rails 22 and projecting upwardly
- 5 above the tops of said rails, the lower edge 30 of the mirror being spaced 780 mm above the level of the floor 32. The spacing between the rails 22 is slightly more than 400 mm.
- The basin is mounted via the plate 19 on a
- 10 horizontally extending beam 34, cantilever fashion, the beam 34 being connected to the face of the plate 19 which faces away from the wall 24, below and to the rear of the basin 14.
- 15 The outlet 18 of the basin is provided with a waste trap 36 provided with a flexible outlet or waste pipe 38.
- The basin is further provided with a thermostatically controlled, lever operated variable
- 20 flow mixer 40 having a single outlet and having its hot and cold water inlets connected respectively to hot and cold water supply pipes in the form of heavy duty flexible rubber pressure hoses 42.
- 25 Bearing in mind the vertical travel of the basin 12 as described in more detail hereunder, the pipe 38 and hoses 42 will typically have a length of up to 1 metre.
- In the arrangement shown in the drawings,
- 30 the hoses 42 are shown connected to metal flow fittings 44 located adjacent the trap 36, said fittings 44 in turn being connected to the mixer 40 by pipes 48, so that the hoses 42 extend from water supply connections 49 in
- 35 the wall 24 to positions under the basin 12 and adjacent said waste trap 36. The mixer 40 has a movable head 45 which is connected to its outlet by a flexible hose 46 about 1500 mm long
- 40 The beam 34 is mounted on a hydraulic lifting mechanism, which comprises a hydraulic jack 50. The hydraulic jack is of a hydraulic piston and cylinder type, and comprises a piston and cylinder assembly, the cylinder of
- 45 which is shown at 52. The cylinder extends vertically, having its lower end mounted on the ground to form a support post for supporting the basin 12 via the beam 34. The piston of the hydraulic jack is located in the cylinder
- 50 52 and is telescopically extensible therefrom. The hydraulic jack 50 includes a lever operated pump mechanism 54, connected to the upper end of the piston and cylinder assembly of the jack. The pump mechanism 54 has an
- 55 operating or pumping lever 56 which is reciprocable about a pivot connection to the housing of the pumping mechanism 54 at 58, and a release lever 60 connected to the upper end of the housing of the pump mechanism 54.
- 60 The pivot axis of the lever 56 extends horizontally parallel to the surface of the wall 24, and the lever 60 is pivotable about an upwardly extending axis, co-axial with that of the cylinder 52. The lever 56 projects up-
- 65 wardly and away from the wall 24 from its

- pivot axis at 58, to present it in a position where it can conveniently be handled by a person who is standing or sitting in a wheelchair, the lever 60 likewise being at a similar conveniently accessible height of about 700–1200 mm above the floor 42.
- The length and position of the rails 22 on the wall 24, and the vertical travel of the jacking mechanism 50 are arranged such that
- 70 75 the basin is movable between upper and lower extreme positions along the rails 22 in which its rim 16 is at heights respectively of 1150 mm and 720 mm above the floor 42.
- In use the height of said rim 16 above the
- 80 floor 42 is infinitely adjustable. To raise said height, the lever 56 is pumped backwards and forwards about the pivot axis at 58, to raise the basin in the upward direction progressively between locked positions in desired increments, whose size depends on the length of the pump lever stroke. To drop the basin, the lever 60 is pivoted about its axis in a horizontal plane, from a locked position into a release position in which the piston can slide
- 85 90 along the cylinder 52 and the basin 14 can slide along the rails and can drop under the influence of gravity, the nylon inserts in the bushes which receive the rails 22 ensuring that the basin drops at a convenient slow
- 95 predictable rate.
- As the installation is intended for use by handicapped persons, it is of robust construction, such that the rim of the basin 12 remote from the wall can carry a mass or dead weight
- 100 of 150 kg.
- During raising and lowering of the basin 12, the pipe 38 and hoses 32 flex and bend appropriately, to maintain the water and waste connections for the basin in an operative and
- 105 open condition.
- The basin assembly described above with reference to the drawing has been described as employing a lifting mechanism having two operating levers and employing hydraulic fluid
- 110 115 such as a suitable oil. Naturally, variations to the lifting mechanism are possible, within the scope of the present invention.
- Thus, instead of having two levers 56, 60 as illustrated, the hydraulic jack 50 shown in
- 120 the drawings can be operated by a single lever. This lever can be arranged to raise the basin by means of a pumping action, and to lower the basin under gravity by movement to a release position which permits retracting
- 125 Furthermore, instead of employing a separate hydraulic fluid such as oil, the hydraulic fluid may comprise water. In this arrangement a lifting mechanism can be provided, having a telescopic piston and cylinder arrangement, operable by mains water pressure. A lever can be provided at a convenient height alongside the basin, operable to admit mains water under pressure to the piston and cylinder
- 130 arrangement to raise the basin to a convenient

height, by extending the piston and cylinder arrangement, the lever being operable to lock the arrangement at any desired elevation of the basin, between its upper end lower extreme positions. If it is desired to lower the basin, the lever can be operated to release water from the cylinder into the drainage or waste system of the basin, thereby to allow the piston and cylinder arrangement to retract under gravity, to lower the basin to a desired lower elevation, in which it can again be locked.

In yet further embodiments of the invention, the lifting mechanism may be positioned centrally behind the basin instead of alongside the basin, and it can be wall-mounted instead of floor-mounted. Furthermore, the rails 22 can be replaced by guides or tracks for wheels mounted on the rear of the basin, for example on the back of the plate 19, to replace the bushes described with reference to the drawings. Furthermore, instead of having the piston and cylinder arrangement connected directly to the plate 19 by the beam 34, this connection can be indirect, eg by means of cables connected to the piston and cylinder arrangement.

To improve appearance and safety, the assembly can be provided with a box-like housing for wall mounting, which encloses parts of the assembly which may be immobile or stationary, eg parts of the assembly which do not move up and down with the basin such as the jacking mechanism, levers, mirror and the like, the moving parts such as the basin, the plate at the rear of the basin, the variable flow mixer, etc not being enclosed by the housing. In this construction the moving parts may be mounted on the stationary parts, eg by being mounted on the housing, and firmly retained thereon by guides which permit the moving parts to slide up and down. If desired, the parts enclosed by the housing may be recessed into the wall so that the housing is more or less flush with the wall, the only parts standing proud of the wall comprising the moving parts which move up and down with the basin, and possibly the control lever or levers, so that the mirror can be located substantially in the plane of the wall surface.

Finally, it should be noted that, although the drawing shows a mixer 43 with knurled knobs for controlling the operation thereof, these knobs can instead, or indeed for aged or incapacitated users preferably, be replaced by or provided with levers which project radially relative to the axis of rotation, to slope eg upwardly and forwardly, for easy and convenient operation.

It is an advantage of the invention that it provides a wash basin whose height is adjustable, which is particularly suitable for handicapped or infirm persons, such as persons confined to wheelchairs, the aged, etc. The wash basin will be convenient for use in

hospitals, and general households can benefit from it, as it can easily be used by children, pregnant women, people who are temporarily ill or affected by handicaps, and who may prefer to use a wash basin while seated on a chair. The Applicant believes that the invention will potentially benefit between 10 and 20% of the total population.

75 CLAIMS

1. A wash basin assembly which includes: a wash basin mounted on an adjustable mounting; and a hydraulic lifting mechanism connected to the basin for adjusting the height of the wash basin on the mounting in use.
2. A wash basin assembly as claimed in claim 1 wherein the adjustable mounting comprises at least one slide rail, along which the basin is slidable.
3. A wash basin assembly as claimed in claim 1 or claim 2 wherein the hydraulic lifting mechanism is in the form of a hydraulic jack.
4. A wash basin assembly as claimed in claim 3 wherein the hydraulic jack has an operating lever for extending the jack progressively between various locked positions and has a release lever for releasing the jack to permit the jack to retract.
5. A wash basin assembly as claimed in claim 1 or claim 2, in which the lifting mechanism comprises a telescopic piston and cylinder arrangement, operable by mains water pressure.
6. A wash basin assembly as claimed in any of the preceding claims wherein the basin is provided with a splash plate attached thereto to project upwardly from the rim of the basin and extend horizontally along the rear side of the rim in use.
7. A wash basin assembly as claimed in any of the preceding claims wherein the wash basin is provided with a variable flow mixer mounted thereon for mixing hot and cold water supplies.
8. A wash basin assembly as claimed in claim 7 wherein the mixer is provided with a single outlet and is thermostatically controlled.
9. A wash basin assembly as claimed in claim 8 wherein the outlet of the mixer is provided with a movable head connected thereto by means of a flexible hose, and with lever operated controls for the thermostatic control and the flow control thereof.
10. A wash basin installation which includes:
 - a wash basin assembly as claimed in any of the preceding claims and wherein the basin is operatively mounted on the adjustable mounting and is provided with a flexible waste pipe leading to a drain and with at least one flexible water supply pipe connected to a water supply.
11. A wash basin assembly substantially

as described and illustrated.

12. A wash basin installation, substantially as described and illustrated.

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